

Town of Los Altos Hills

Sanitary Sewer Construction Standards

GENERAL NOTES

1. All References to "Town" in these general notes shall mean Town of Los Altos Hills Public Works Department.
2. All sanitary sewer workmanship and materials shall conform to requirements of current Town Standard Details, Construction Standards, and the City Engineer.
3. The approval of these plans by the Town shall be interpreted to mean that the sanitary sewer design shown on these plans meets the Town's Standards. The Town's approval in no way guarantees any other aspect of this plan or its accuracy relative to actual field conditions.
4. The City Engineer is authorized to require modifications during construction.
5. The contractor shall contact the Town at 650-941-7222, two (2) working days in advance of beginning any sanitary sewer work. The contractor shall thereafter keep the Town Inspector informed of his schedule for sanitary sewer work.
6. Prior to commencement of excavation work, the contractor shall contact all utility companies by calling Underground Service Alert (USA) at 1-800-227-2600 at least forty-eight (48) hours prior to start of construction.
7. The contractor shall field verify the location of all utilities before beginning any excavation.
8. The contractor shall obtain any and all permits required by the Town before beginning any sanitary sewer work.
9. Contractor shall obtain encroachment permit prior to any work in the Town right-of-way. A pre-construction meeting is required with the Public Works Department.
10. Applicant shall provide sufficient deposit to the Town for inspection, testing, community outreach, staff time, arborist, traffic consultants, safety specialist and other services as determined by the City Engineer. Any outstanding deposit shall be paid in full prior to final sign off.
11. Sewer connection permits shall be issued by the Town for all proposed new connections.
12. Existing sanitary sewer service shall be maintained at all times. The contractor shall use whatever means necessary (e.g. pumps, bypass lines, etc.) to maintain this service during construction.
13. Prior to commencing any sanitary sewer work in easements, the contractor shall provide the Town with adequate evidence that all affected property owners (and tenants where applicable) were notified forty-eight (48) hours prior to the date of work and that they have updated that notice in a timely manner when those dates have changed.
14. All sanitary sewer work constructed without inspection by the Town shall be removed and reconstructed with inspection.
15. All sanitary sewer laterals shall be 4" PVC-SDR 26 or approved equal, one per lot and marked with the letter 'S' on a post per Town's standards.
16. Sewer mains shall be minimum of 8" PVC-SDR 26 or approved equal and have (a) 1% minimum slope or as approved by the City Engineer, and (b) minimum self-cleaning velocity of 2 feet per second.
17. Sewer laterals shall be a minimum of 4' below top of curb or finished ground at property line unless authorized by the City Engineer.
18. The contractor shall be responsible for verifying the elevation of all existing storm drains and sewers to be extended or connected prior to commencing work.
19. Traffic Control Plan shall be prepared by a licensed Traffic Engineer. Traffic Control Plan shall be in accordance with Town's construction standards and subject to review and approval of the City Engineer prior to permit issuance.
20. Two open traffic lanes are required during all non-working hours. One travel lane may be closed during work hours when flaggers are present.
21. Sewer trenches and permanent pavement within right-of-way and/or easements shall conform to Town's Standard Detail UT-1 and UT-2.

Town of Los Altos Hills
Sanitary Sewer Construction Standards

22. The contractor shall place temporary form fitting pieces of plywood or other suitable material over the bottoms of the manholes to prevent entry of foreign materials from the manhole to the pipe.
23. No open trenches in the street right-of-way will be allowed overnight. All trenches shall be backfill the same day the trench was excavated, except that portion of the trench or excavation to be used for connecting the extension of the installation. That said portion shall be adequately barricaded and protected to the satisfaction of the City Engineer or his representative. Excavations or trenches for poured in place concrete manhole may remain open for a period not to exceed seven days, providing said excavation or trenches are adequately barricaded, fenced, and plated with skid resistant steel plate of adequate thickness and flushed with pavement. The number of plates to be utilized each day shall be approved by the City Engineering or his representative.
24. All utility frames and covers, existing and proposed monuments, shall be brought to finish grade after finished paving.
25. 'Tracer Wire' shall be installed along the top of the pipe for all sections of the sewer line. The wire shall be solid copper AWG #10 with an insulated jacket. Detector tape shall also be installed within top 12" of pavement.
26. Sanitary sewer mains shall be flushed, mandreled, air tested, and video taped in accordance with Town's testing and retesting requirements.
27. Contractor shall submit video inspection CD/DVD to the Town for review and approval of the City Engineer prior to acceptance of the sewer main. The Contractor shall be responsible for repairing any defective sections observed in the video inspection to City engineer's satisfaction.
28. In areas where the existing road pavement is trenched for installation of the sewer main, contractor shall restore the pavement per Town of Los Altos Hills Standards. If the trench is more than 300 feet long, the street shall be slurry sealed. In the case where slurry seal is not suitable as determined by the Town, a fee may be required prior to permit issuance.
29. An as-built mylar plan, consists of locations of all sewer main and lateral wyes in the main trunk with reference to manholes, shall be submitted prior to acceptance of the improvements.
30. The Town is not responsible for cleaning private sewer laterals. The property owner is fully responsible for maintenance, repair, and replacement of the (a) lateral from the house to the main including wye connection at the main, (b) overflow, and (c) backflow devices.
31. All works to be done to the satisfaction of the City Engineer.
32. Include signature blocks, where applicable, for the following agencies:
 - a. Town of Los Altos Hills Public works director:

APPROVED AS TO COMPLIANCE WITH TOWN OF LOS ALTOS HILLS REQUIREMENTS

Richard Chiu, Jr., Public Works Director	C.E. 55414	DATE
Town of Los Altos Hills	EXP. 12-31-12	

- b. Purissima Hills Water district:

Approved by

Purissima Hills Water District	date
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Town of Los Altos Hills
Sanitary Sewer Construction Standards

c. California Water Service Company

These plans have been reviewed for general conformance with California Water Service Company Standards.

California Water Service Company

Date

Town of Los Altos Hills
Sanitary Sewer Construction Standards

PIPES AND FITTINGS

Polyvinyl Chloride Pipe (PVC)

1. All pipe and fittings shall conform to ASTM Specifications D3034, SDR 26.
2. All joints shall be a bell and spigot assembly with elastomeric sealing gaskets sealing gaskets shall meet the requirements of ASTM Specification D1869, Solvent Cement joints are not permitted.
3. All pipes entering or leaving a concrete structure shall have a rubber waterstop gasket attached to it. The waterstop gasket shall conform to the pipe manufacturer's specifications. The waterstop gasket shall be sealed firmly around the pipe exterior and be cast into the concrete structure.
4. All pipe joints shall be made using manufactured PVC couplings. Band type compression couplings are not permitted, except repairs. Fernco or equivalent.

Vitrified Clay Pipe (VCP)

5. Pipe and fitting shall be extra strength, unglazed, bell and spigot, conforming to the latest version of ASTM Specification C700.
6. Joints shall be a bell and spigot assembly with factory installed flexible compression type gaskets made of plasticized polyvinyl or polyurethane conforming to the latest revision of ASTM specifications C425.

Town of Los Altos Hills

Sanitary Sewer Construction Standards

TESTING REQUIREMENTS

1. All references to the "Town" in these testing requirements shall mean the appropriate town of Los Altos Hills Public Works Department.
2. All required cleaning and testing of sanitary sewer mains and laterals shall be performed in the presence of a Town representative.
3. All sanitary sewer mains being constructed shall be cleaned by means of a high speed jet rodder prior to testing.
4. All sanitary sewer line testing shall be done after trench backfilling but before paving.
5. All sanitary sewer mains being constructed shall pass a low pressure air test. Each section of main shall be tested between successive manholes. The low pressure test shall be conducted in the following manner:
 - a. A compressed air supply shall be attached to an air fitting on the main and the air pressure within the line increased to five (5) pounds per square inch (PSI). After the air supply is securely turned off or disconnected, there shall be a two (2) minute waiting period before the actual test period begins to allow stabilization of air within the main.
 - b. In no case shall the air pressure within the line be less than 4 PSI at the beginning of the test period. Refer to the chart which follows for the length of the test period. The minimum length of test is four (4) minutes. The allowable air pressure loss during the test period shall be 0.5 PSI. A written record of the test shall be submitted to the Public Works Department by the contractor.

Nominal Pipe Size (Inches)	Length of Line (feet)	Length of Test (minutes)
4	ALL	4
6	0 – 300	4
6	300 – 370	4 ½
6	370 and Greater	5
8	0 – 170	4
8	170 – 210	4 ½
8	210 – 250	5
8	250 – 290	5 ½
8	290 and Greater	5 ¾
10	0 – 110	4
10	110 – 165	5
10	165 – 215	6
10	215 and greater	6 ¾

6. A television inspection shall be made for all sanitary sewer main being constructed after all other cleaning and testing have been completed. Immediately prior to televising the sewer, an amount of water acceptable to the Town's representative shall be introduced into the sewer main being inspected. When televised inspection is used to check for sag, a calibrated device acceptable to the engineer shall be used to measure the depth of sag.

A video tape in CD/DVD format at SP or equivalent, speed shall be made of the inspection and delivered along with a typed log of the inspection to the Town's Public Works Department for review and acceptance.

Town of Los Altos Hills Sanitary Sewer Construction Standards

Submitted video shall include a continuous on-screen display which contains, as a minimum, the date of the filming, identification of the line and segment (reach) of the line being viewed, and readout, in feet, showing the distance to the entry point.

If, in the opinion of the Town, the submitted video tapes are of poor quality, the Town may reject the video tapes and require the video inspection to be repeated and new video tapes submitted to the Town for review and acceptance. All video tapes shall become the property of the Town.

The following observations shall be considered defects in the new construction of the sewer pipelines and will require corrections, retesting, and re-televising prior to considering of acceptance:

- a. Standing water (sag) over 1/8".
 - b. Offgrade - 0.08 foot, or over, deviation from grade;
 - c. Joint separations - over 3/4";
 - d. Offset joints;
 - e. Chips in pipe ends - none more than 1/4" deep;
 - f. Cracked or damaged pipe or evidence of the presence of all external object bearing upon the pipe (rocks, roots, etc.);
 - g. Infiltration;
 - h. Debris or other foreign objects;
 - i. Other obvious deficiencies when compared to Approved Plans and Specifications, these Standards and Standard Drawings.
7. Deflection testing of PVC sewer mains shall be performed after the placement of all trench backfill. Pipe deflection shall be tested by pulling by hand a go/no-go mandrel through the installed sections of sewer main.

The mandrel used shall have a minimum length equal to its diameter. The mandrel shall be constructed with a minimum of nine (9) ribs fabricated parallel to its longitudinal axis. Both the design of the mandrel and the fabricated mandrel itself shall be inspected by the Town well in advance of the deflection test.

The mandrel diameter shall be 95% of the pipe's average inside diameter as defined by ASTM Specification D3034, and as detailed in the following table:

Nominal Pipe Size (inches)	Average Inside Diameter (inches)	Minimum Mandrel Diameter (inches)
6	5.893	5.598
8	7.891	7.497
10	9.864	9.371

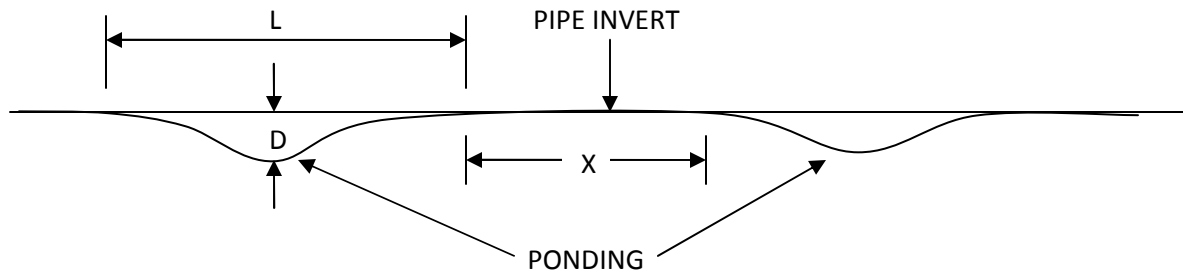
Note: Average inside diameter = average outside diameter – 2(1.06)T, where T = minimum wall thickness as defined by ASTM Specification D3034.

Town of Los Altos Hills

Sanitary Sewer Construction Standards

8. Tolerance of Sags in PVC Sanitary Sewer Pipe:

PIPE DIAMETER (INCHES)	MAXIMUM ALLOWABLE DEPTH (D) OF SAG	MAXIMUM ALLOWABLE LENGTH (L) OF SAG	MINIMUM ALLOWABLE DISTANCE (X) BETWEEN SAGS
4"	NONE	NONE	NONE
6"	NONE	NONE	NONE
8"	1/8"	4 FT	40 FT
10"	1/8"	6 FT	60 FT
12" AND LARGER	1/8"	8 FT	80 FT



Any sags or ponding of water along the pipe will be repaired by excavation of the pipe, realigning and compacting the subgrade or relaying the non-conforming section of pipe if necessary.

- a. The maximum allowable depth of ponding water in sewer pipes: 1/8".
- b. Ponding water in excess of the allowable tolerance will be cause for rejection.
- c. Any defects in the pipe or construction method revealed shall be corrected and re-televised for Town's review, approval, and acceptance.

9. Retesting

Each sanitary sewer pipe shall be retested at a date between eighteen (18) months and twenty-one (21) months from the date of acceptance of that pipe by the Contractor. The line shall be cleaned, mandrelled and televised in the manner specified herein for newly installed pipe. If the retesting reveals any defects due to faulty materials or workmanship, the Contractor shall repair or replace the defective structures to meet all requirements of Town standards including the testing criteria required for acceptance by the Town. Television inspection shall be provided by the Town and be reimbursed by Contractor's remaining deposit. All costs associated with retesting and the correction of defects shall be the responsibility of the Contractor.

10. Additional testing requirements and/or procedures may be required by the City Engineer and/or his representative.

11. All testing and retesting shall be done to the satisfaction of the City Engineer.

Town of Los Altos Hills

Sanitary Sewer Construction Standards

TRAFFIC CONTROL

1. The contractor shall provide for safe movement of vehicular, bicycle, equestrian, and pedestrian traffic through and around construction operations. Traffic control requirements set forth herein are the minimum requirements imposed. The contractor shall be solely responsible for providing all protective measures necessary.
2. Traffic Control Plans:
 - a. Shall be prepared by a licensed Traffic Engineer to clearly describe proposed traffic control measures for vehicles, bicycles, equestrians, and pedestrians. The plans shall be generally in accordance with the illustration included in the Manual of Traffic Control.
 - b. Shall provide a detailed approach for detours and to control traffic through the construction zone,
 - c. Shall consist of scaled drawings for each situation anticipated to be encountered, i.e. intersections, mid-block (each during working and non-working hours), etc.
 - d. Shall show signs, traffic control devices and flaggers as required.
 - e. Shall conform to Caltrans and Town Standards,
 - f. Are subject to review and approval of the City Engineer before construction begins.
3. Traffic Control Devices:
 - a. General –
 - i. Provide traffic control devices in sufficient quantities and types as required to provide safe and adequate traffic control
 - ii. During hours of darkness, approved lights and/or flares shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic.
 - iii. Provide and maintain barricades along all open trenches in contact with traffic.
 - iv. No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised.
 - v. Contractor shall install additional traffic control measures as required by the City Engineer or his representative.
 - b. Cones or Delineators –
 - i. Cones or Delineators shall consist of cylindrical or cone shaped plastic devices, which shall be 18-inch to 48-inche in height.
 - ii. Cones or Delineators shall have a flexible base of suitable weight, which will ensure stability.
 - iii. Cones used during hours of darkness shall be internally illuminated or reflectorized meeting the requirements of the Manual of Traffic Controls.
 - c. Barricades –
 - i. Barricades shall be Type I, Type II or Type III barricades as set forth in the Manual of Traffic Controls.
 - ii. Barricades used during hours of darkness shall be equipped with flashers.
 - d. Electronic message boards to be placed 14 days prior to start of work.
 - e. Placement –
 - i. Place all traffic control devices in accordance with the manual of Traffic controls and favorably reviewed Traffic Control Plan.
 - ii. Adjust locations of devices to suit the conditions and circumstances of each detour situation. In all cases, place signs to most effectively convey their messages to approaching traffic.

Town of Los Altos Hills

Sanitary Sewer Construction Standards

- f. Test Drive of Detour –
 - i. Immediately after traffic control devices have been placed, the detour shall be test driven by the Contractor's representative.
 - ii. Test drive shall include approach to the detour from each possible direction and traversing full length of each detour route.
 - iii. The Contractor shall adjust and revise all traffic control devices as determined to be required by test drive through and shall repeat test drive if determined necessary by the City Engineer.
 - iv. The Contractor shall provide additional traffic control devices if required to maintain flow of traffic through construction operation.
 - g. Maintenance of Devices –
 - i. The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operation and whenever a hazard resulting from Contractor's operation exists.
 - ii. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations.
 - h. Removal of Devices –
 - i. Traffic control device shall remain in place at all times required to alert approaching traffic of upcoming hazards.
 - ii. After hazard has been removed, remove all traffic control devices. Remove signs or cover their messages.
4. Flaggers:
- a. General –
 - i. The Contractor shall employ flaggers as required for each specific detour
 - ii. The Contractor shall employ flaggers at all locations on a construction site where barricades and warning signs cannot control the moving traffic.
 - b. Placement – where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed approximately 100 feet ahead of impact point.
 - c. Warning Signs –
 - i. Place a warning sign ahead of the flagger reading: "Flagger Ahead." The distance between the sign and the flagger shall be based on the average traffic speed.
 - ii. During hours of darkness, illuminate flagger stations such that the flagger will be clearly visible to approaching traffic. Lights for illuminating the flagger station shall be reviewed and approved by the City Engineer.
 - d. Equipment –
 - i. Provide flagger with a red or orange warning garment when flagging. Provide flaggers with approved hand signs and two-way radios for communication.
 - ii. When flagging during hours of darkness, the flagger shall signal with a red light or flare and shall have a belt and suspender harness outside his garment fitted with reflectors or made from reflectorized cloth, unless the garment is well reflectorized in one of these ways.
5. Access to Private Property
- a. General – the Contractor shall schedule operations to minimize disruption of access to private properties.

Town of Los Altos Hills

Sanitary Sewer Construction Standards

- b. Notice to Residents – Prior to blocking access to any private driveway or parking lot entrance, the Contractor shall notify the resident or business owner or tenant of pending closure and allow resident to remove vehicles.
 - c. Nights – during non-working hours no driveway, house or parking lot shall be denied access to a public roadway.
- 6. Notice to Agencies:
 - a. The Contractor shall notify in writing all agencies having jurisdiction at least forty-eight (48) hours, excluding holidays and weekends, prior to instituting any lane closure or detour. At the end of each day's work, the Contractor shall inform the ambulance service, police, and fire departments of the status of all detours and/or lane or road closures that will be in effect the next day.
 - b. List of Agencies:
 - i. Town of Los Altos Hills
 - ii. County Fire & Police Department
 - iii. U.S. Postal Service
 - iv. Ambulance Services
 - v. Green Waste Recovery
- 7. Emergency Vehicle Access Through Detours:
 - a. During construction I nor adjacent to roadways in the project site, Contractor shall maintain at least one lane open in each direction of the road to allow emergency vehicle access for police, fire and ambulance to the project vicinity.
 - b. During all detours and/or street closures the Contractor shall provide for movement of emergency vehicles through the work area.
 - c. It is essential that the Contractor's work and equipment does not impede egress from any fire or police station to other area of their service area.
- 8. Diverting Traffic:
 - a. Diverting Pedestrian, Equestrian, and Bicyclist Traffic:
 - i. Whenever construction operations obstruct the flow of pedestrian, equestrian, and/or bicycle traffic or present a hazard to pedestrians, horses, and bicyclists, the Contractor shall take appropriate action to protect and separate them from the work area.
 - ii. Such action may include placement of barricades between pedestrians, horses, and bicyclists and work areas, placement of warning signs, and provision of personnel as required to protect pedestrians, horses, cyclists as conditions of warrant.
 - b. Diverting Vehicular Traffic:
 - i. Whenever construction operations obstruct the flow of vehicular traffic or present a hazard to vehicles operating in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour and otherwise protect approaching drivers and vehicles.
- 9. Parking Restrictions:
 - a. General – The Contractor shall post approved "No Parking" signs at all location necessary to establish work areas and detour traffic
 - b. Signs – signs shall be placed at least 24 hours in advance or restriction.
 - c. Contractor shall provide his own staging areas.

Town of Los Altos Hills
Sanitary Sewer Construction Standards

PLATING AND TEMPORARY SURFACING

1. Trenches will be covered with plates which shall be flushed with existing pavement and skid resistant.
2. The temporary surfacing shall be Class 2 aggregate base as specified in Section 26 of the Standard Specifications. The aggregate base shall be equal in depth to the existing pavement structural section, but in any case not less than eighteen (18") inches in depth. The aggregate base shall be brought within one (1") inch of the top of the existing paving and covered with temporary "cold mix" asphalt paving using an MC-250, MC-800 or approved equal. All temporary surfacing shall be installed the same day as backfilling and shall be level with the existing paving.

The Contractor shall maintain the temporary surfacing level with the existing paved surface at all times. All dirt and gravel and debris of any kind shall be removed from Town streets by the end of the day. All temporary asphalt shall comply fully with the Bay Area Air Quality Management District's Regulation 8, Rule 15.

Section 302 of Rule 15 prohibits the use of "cut back" asphalt (including MC-70) during the months of April through October in paving material or in paving and maintenance operations. The Contractor shall use only slow-cure (SC) liquid asphalts for temporary trench paving during April through October.

In the event the Contractor does not comply fully with the above requirements, no further excavation will be permitted until the requirements are met.

3. All work shall be done to the satisfaction of the City Engineer.